

ABSTRACT OF THE DISCLOSURE

A hardened voyage data recorder includes two subsystems: a removable non-volatile memory module and a base containing electronics and firmware for communicating with data sensing systems and for accessing the memory. According to the invention, the memory is a stacked BGA memory protected in a "boiler" which is designed to tolerate a low temperature fire environment for a relatively long term. The boiler and the memory module subsystem are designed to withstand penetration forces associated with marine accidents. Cabling from the memory is arranged so that the structural integrity of the boiler is not compromised.